Questions from the Firefighters Association: March 3, 2009

1. What is the Strategic Plan for the 800 MHZ system, and if so, can we see the plans?

Planning Background: The plan to move to the 800 MHz VIPER system is referenced in several plans. It was included in the plans at the recommendation of the Public Safety Information Committee. The first plan is the Catawba County Strategic Plan, Dated June 2007. It can be found on the web at http://enewsletter.catawbacountync.gov/ITC/strategicplan061107.pdf . It is also a recommendation in the Catawba County E911 Communications Center Strategic Plan which can be found at http://www.catawbacountync.gov/depts/communic/stat_911.pdf.

The working plan for 800 MHz can be found at http://www.catawbacountync.gov/depts/communic/800mhz_plan.pdf.

Addition information may be found at the E911 Communications Center webpage at http://www.catawbacountync.gov/depts/communic/ .

Recommendations are listed below:

Catawba County Government
Technology Strategic Plan
June 2007

Initiative 6.2

Build a reliable communication network that provides for interoperability across the County. The County has a reliable radio network in place but it is limited by several factors, 1) it is a voter receive system that leaves some areas without communication depending on which tower signals originate from, 2) Hickory has an 800 Mhz system which does not allow for communications between Hickory PD and other emergency services, and 3) there is no data capability in the current system. Each of these areas diminish the level of service that can be provided by Public Safety and need to be addressed. (See appendix for more detail)

Catawba County Government
E911 Communications Center Strategic Plan

Recommendation 4.1

Form a partnership with the North Carolina State Highway Patrol to move to the VIPER system. (This recommendation is the same as 2.1) The VIPER network was built for public safety interoperability across the state. It works off of an 800 MHz trunked system. Current coverage in the Catawba County area is good and will provide even more coverage with the addition or upgrade of several tower sites.

The Public Safety Information Committee recommends that we move to the 800 MHz system over the next five years. The first agencies to convert would be Law Enforcement and EMS. They would use the current VIPER infrastructure with other agencies using the current VHF system. The two systems would be connected in the Communications Center. At the same time, Catawba County would work with the NCSHP to complete the construction of the Riverbend Tower and upgrade to the NCSHP tower on Baker's Mountain. Catawba County would also apply for grant funding for a new tower in Newton and for matching funding for 800 MHz radios.

The existing VHF network would be left in place for agencies using the VHF radios until they are all replaced. At that time, the VHF network would become a backup for the 800 system.

2. Is there a deadline that the County has established for converting from the current VHF system, and if so, why hasn't the fire service in the county seen that?

   No there is no deadline. Conversion to the 800MHz system is dependent on funding and entirely at the option of fire departments.

3. Will the VHF system still be in place along with the 800 MHZ system?

   Yes, the current VHF system will be left in place to provide an orderly conversion path to 800 MHz and to build redundancy into the network. Transition from one system to the other will not occur overnight and is dependent of funding. The current VHF system will be left in place until it is no longer a viable option.

4. Is Catawba County going to allow the departments to adjust their budgets for the additional funds that will be needed to purchase radios and communication equipment to meet the requirements of the 800 MHZ system?

   Departments will have to make decisions about their budget and 800 MHz radios. No one is required to move to the system this year and will not be until the VHF system is no longer a viable option.

5. Are there any user fees and or services that would be associated with the 800 MHZ system that fire departments would be expected to pick up?

There are no fees associated with the 800 MHz system.

There are no fees associated with the state VIPER system. See information below. The County has made significant contributions in grants and land to allow the state to build this network and the state needs our help and other counties to complete the project. However, economic conditions may change this is the future.

There is no fee.

Mike

From: Jerry Boggs [mailto:JERRYB@catawbacountync.gov]
Sent: Friday, February 27, 2009 1:15 PM
To: Hodgson, Michael
Subject: USER FEE

I think I ask you this, do you expect user fees with the Viper System

6. What if agencies decided not to participate in part of the 800 MHZ system?

   The VHF and 800 systems will be patched together for communications. There is no requirement for you to move to the 800 MHz system. However; fire departments should note that this grant through the Assistance to Firefighters Grant is hopefully going to be sponsored by one of the area fire departments and the more people effected the better the chance of getting the funds . The top two priorities of the grant is regional cooperation and interoperability. Cleveland County and Caldwell County have already received substantial funds through this source and hopefully we will be successful.

7. Why are agencies being told or allowed to purchase VHF radios if Catawba County is going to 800 MHZ?
   I am not familiar with this statement, but we are not forcing anyone to go to Viper. It's another tool of interoperability if they choose to do so.

8. If we do go to 800 MHZ, doesn't it make since to test the radio(s) that are being looked at in a fire situation to see if they perform in a life and death situation?

   No one wants to put anyone in danger. The radios have been tested across the county and in all tests gave better coverage than the VHF radios. Those test were related to coverage, any fire department that wants to test some of the 800MHz radios are certainly invited to do so.

   a. Basically, the cheapest may not be the option.

That is correct. While Federal grant requirements require a bid process it will follow NC State requirements. The key here is to write good requirements for the bid and make sure that what we bid meets our needs.

8. Will a stand alone 800 MHZ system (Hickory City & Mooresville FD) work with the Viper System?

   Hickory no, but they will have a Viper patch. Mooresville Yes

9. Will the Viper System be built out and if so, what does that mean to us?

   Yes VIPER will be built out. It is more that 50% complete. 60% of the remaining sites are funded. VIPER is completely built out in Catawba County.

   Statewide network and interoperability within your department and with other departments. The concept of the Viper System is to allow direct communications with State wide resources.

10. If we go with the Viper System and the state has a big emergency, will they pull our channels and reduce our capability?

    No, it would allow for a more efficient communication during emergencies of a large magnitude. The state has over 4000 talkgroups and have setup special ones that are usable across the state to facilitate emergencies.

11. What is the cost of the two radio's Jerry Boggs said would work on the Viper System?

Mobiles XTL2500		
		$ 3,100.00
Portables XTS2500		
Model II		$ 3,044.00
Model I		$ 2,505.00
XTS1500	I	$ 1,430.00
XTS1500	I.5	$ 1,515.00

    E.F. Johnson $2,250.

    Note the above is State Contract pricing. Actual numbers will be based on bids. Other units may be available.

12. Has anyone talked to other NC counties that have made the change to 800 MHZ, seen what road blocks they encountered, and their strategies they used to overcome their problems?

    Currently we have talked with Caldwell County yes they had issues but have

overcome them. Most were same questions being asked now. They had an incident when they first started Fire did not want to go to 800 but had a search in the gorge and nobody could talk on their VHF due to the terrain but they could on 800, they couldn't get 800 radio's in fast enough after that. All is going well in Caldwell.

13. What is the advantage of 800 MHZ over what we are using?

Interoperability and statewide coverage are the main advantages. In the future systems will be linked together to other states, example N.C. to S.C. to Georgia and Florida.
That is how the big picture looks down the road.

14. In reference to question 10. Is there any type of agreement entered into with the state for the use of their tower space?

No written agreement for their tower space. The Riverbend tower grant gives us the right to put our VHF and other equipment on that tower. The state will be providing tower space and maintenance of the VIPER equipment.

15. What is the estimated cost of the whole 800 MHz system?

- Statewide infrastructure, which includes 238 transmitter sites statewide, is estimated to cost $189 million over the build-out period of about four years.
- In an effort to reduce the overall cost of construction, the State Highway Patrol is acting as prime contractor and will manage the subcontractors.
- Total costs for everyone in the county except Hickory PD to use the system is estimated at about $3 million.

16. Will we be able to talk state wide on the 800 MHz system?

Covered in question 13, Yes

17. What is the deadline of 2017 mean to the fire service?

Nothing.
Commission took the following actions in order to bring about a timely transition to narrowband technology: (1) set January 1, 2013, as the deadline for Industrial/Business and Public Safety Radio Pool licensees in the 150-174 MHz and 421-512 MHz bands to either migrate to 12.5 kHz technology, or utilize a technology that achieves equivalent efficiency; (2) prohibited any applications for new systems using 25 kHz channels, or modification applications that expand the authorized contour of an existing 25 kHz station, effective January 1, 2011; (3) prohibited the manufacture and importation of any 150-174 MHz or 421-512

MHz band equipment capable of operating with only one voice path per 25 kHz of spectrum, *i.e.*, equipment that includes a 25 kHz mode, beginning January 1, 2011; and (4) prohibited the certification of any equipment that includes a 25 kHz mode beginning January 1, 2011.

2017 represents the deadline to move to 6.25 and this currently implies a digital system.

Note : The changes to VHF above mean less coverage than the current system.

18. Does the 800 MHz system allow radio to radio communications possible?

    Yes.

    a. Or does the radio have to go to a repeater and then back to the hand held unit?

19. Is there any license issues with the 800 MHz system?
    No they will be handled by the State of N.C.

20. How many total radios will be allowed on the system?
    Up to 64,000 users over 4,000 talk groups

VIPER Quick Facts

- 238 total sites planned for statewide coverage.
  125 sites constructed and on-the-air
  76 sites are fully funded and under construction
  37 sites remaining to be funded and built

- VIPER estimated to cost $189 million
  $107 million funded to date
  $ 81.5 million remains to be funded

- VIPER is 53% complete (number of sites) with 125 sites on-the-air
- VIPER infrastructure is 57% funded;
- 43% of VIPER remains to be funded
- 34,104 users are currently on the VIPER Network
- 150 Emergency Responding agencies (including federal, state and local agencies) makeup the 34,104 radio users

- SC has the same type Interoperable System; NC/SC can talk to each other using the same type user device.

Public Safety Information Committee Members

Tom Alexander	Hickory Fire	talexander@ci.hickory.nc.us
Ronald Raybon	North Carolina Highway Patrol	rraybon@ncshp.org
Bryan Blanton	EMS	BBlanton@catawbacountyNC.gov
Lee Worsley	Assistant County Manager	LWorsley@catawbacountyNC.gov
Brian A Drum	Communications Center	badrum@catawbacountync.gov
Coy Reid	Sheriff's Office	coy@catawbacountync.gov
David Weldon	Emergency Services	davidw@catawbacountync.gov
Don Brown	City of Newton	dbrown@newtonnc.gov
Donald Godfrey	Fire Association	donaldkg@charter.net
Fred Hollar	Hickory Fire	fhollar@ci.hickory.nc.us
Gary Lafone	Conover Police	garyl@ci.conover.nc.us
Henry Helton	EMS & Rescue Assn.	hhelton@catawbacountync.gov
Jay Jackson	Hickory Police	jjackso@ci.hickory.nc.us
Jeff Barger	Fire Association	jeffreybarger@yahoo.com
Jim Kurz	Hickory Police	jkurz@ci.hickory.nc.us
Jody Smyre	EMS & Rescue Assn.	jsmyre@catawbacountync.gov
Mark Sigmon	EMS	msigmon@catawbacountync.gov
Jerry Boggs	Communications Center	jerryb@catawbacountync.gov
Jerry Travis	City of Newton	jtravis@newtonnc.gov
Terry Bledsoe	ITC	Tbledsoe@catawbacountync.gov
Jeff Brittain	City of Hickory	Jbrittain@ci.hickory.nc.us
Jim Chandler	WPCOG	jim.chandler@wpcog.org
Parviz Mollahassani	City of Newton	Parviz@newtonnc.gov
Rick Cook	ITC	Rcook@catawbacountyNC.gov
George Byers	Hickory Fire	gbyers@ci.hickory.nc.us
Donna Stikeleather	Communications Center	dstikeleather@catawbacountync.gov
Donny Houston	Asst Chief Catawba Rescue	DHouston@catawbacountync.gov
Lynn Baker	Sheriff's Office	lbaker@catawbacountync.gov
Warren Wood	City of Hickory	wwood@ci.hickory.nc.us
Eric Loftin	Conover Police Department	eric.loftin@conovernc.gov
Mark Petit	Catawba Co. Emergency Serv	mpetit@catawbacountync.gov
Michael Barrick	Frye Regional Medical Center	Michael.barrick@tenethealth.com
Mike Helton	Catawba Valley Medical Center	mhelton@catawbavalleymc.org
Kelly Isenhour	Public Health	Kelly@catawbacountyNC.gov
Mark Hinson	Fire Fighters Association	mark.hinson@conovernc.gov

VIPER Frequently Asked Questions
http://www.nccrimecontrol.org

There have been several questions asked and concerns expressed about using 800 MHz as our radio frequencies for the VIPER network, and about the VIPER Network in general. Below are listed some of the most common.

Q: Will 800 MHz work in the mountains?

A: 800 MHz radios have been proven to work in mountainous areas across the United States, and in fact the current CJIN mobile data network is operating on 800 MHz frequencies. The states of Utah, Colorado, West Virginia and Pennsylvania are using 800 MHz radios for their radio systems.

Q: Is this radio network simply a new radio system for the State Highway Patrol?

A: The State Highway Patrol was identified by the Legislative CJIN Report to be the managing agency of the 800 MHz statewide voice and the statewide data system. The Secretary of Crime Control and Public Safety through the Division of the State Highway Patrol is statutorily required to maintain a statewide radio system. The State Highway Patrol, as with the Mobile Data Network, will be a small user in comparison to the number of local users on the network.

Q: Will the cost of construction will be expensive?

A: As with all new technologies, there is an expense to implement and maintain this new statewide network. However, when compared to modern radio systems installed in the states of Michigan, Pennsylvania and Ohio our estimates for North Carolina are not unreasonable. It should be noted that the state of New York has recently received a bid for a statewide radio system that is estimated to cost one billion dollars.

Q: Will there be voice and text pager capabilities with VIPER?

A: No. Unfortunately, the technology used for 800 MHz trunked radio systems does not allow for a paging solution. Agencies requiring paging will have to continue to support their existing paging system. However, where available, tower space will be offered to VIPER participants on State Highway Patrol owned towers for local agency paging antennas.

Q: What about satellite communications?

A: Satellite technology does have one advantage over typical trunked radio systems in that it is not terrestrial based. This essentially means that a satellite based communications system would be relatively free from harm as related to most natural or manmade disasters.

However, the primary drawback to satellite based systems is that in order to function, the subscriber handset or radio unit must be in constant view of the sky. This would eliminate operation inside buildings or in areas of dense foliage or during heavy rainfall or intense cloud cover.

Satellite communications often don't work well in "urban canyons" (in streets and alleyways between tall buildings) because there is no line of sight to the satellites on the horizon. All of these detractions far outweigh the benefit of the system being somewhat impervious to being dependant on easily damaged infrastructure on earth.

Satellite systems also suffer from lengthy delays as the conversation is routed up into the sky many hundreds of miles and back down again to the receiving radio or handset. Furthermore, satellite based technology will have to be refreshed as the orbit of the satellite can only be sustained for a finite number of years.

However, satellite communications would be a viable option in areas where terrestrial

infrastructure would be too costly to serve the population such as the desert southwest of the US or the Middle East.

Q: Do I have to buy a certain brand of radio to operate on the VIPER network?

A: No. VIPER is the expansion of an existing Motorola radio system owned by the State, so obviously Motorola radios will work on the network. We have demonstrated the successful operation of EF Johnson radios on the VIPER network. So if a user prefers to use radios other than Motorola, they have the option of using EF Johnson radios.

Q: Will there be a cost to use the VIPER network?

A: The success of VIPER depends on our partnerships with state and local agencies, and the sharing of existing resources which may range from property to build the towers on to re-use of existing towers. These in-kind contributions will help keep the overall cost of construction lower than if we had to buy property and build new towers where state owned towers are not available.

It was those partnerships that allowed the state to build the statewide mobile data network for less that $20m as compared to the estimate in 1993 of more than $100m for the state to build the infrastructure.

Our goal is not to ask the locals for free use of their land and/or towers and then require them to pay to use the system. We don't want to find ourselves in a situation where all our partners demand that we pay them for their resources so they can pay a users' fee. Additionally, there are many rural area departments that would not be able to pay a user fee and therefore would not be able to participate in VIPER at all.

Q: Will local agencies continue to dispatch their own personnel or will that be taken over by the Highway Patrol?

A: Local agencies will continue to dispatch and control their personnel as they do today. However, they will need to incorporate 800 MHz radios into their dispatch center consoles so they can communicate with their personnel.

Q: Will this project be awarded to a single vendor?

A: This is an expensive project and there will be large amounts of funds spent. However, with the Patrol acting as prime contractor, there is not a single vendor profiting from the total project funds.

There are many products that will be purchased from different vendors who will be required to compete in the competitive bid process and many pieces purchased of the State's standing convenience contracts.

However, there may be circumstances such as product integration with existing infrastructure and compatibility where a single or fewer vendors may be selected, but those vendors will not profit from other infrastructure equipment. These products include, but are not limited to, equipment buildings, towers and tower work, generators, microwave equipment, intellirepeaters and network routers.

Q: Can VIPER use cell towers?

A: Most cell towers are not high enough to get the desired coverage for the each site. However, in cases where cellular companies have erected tall towers we will take them into consideration if offered access. In an effort to keep the annual recurring operating cost at a minimum, we seek tower space that does not require us to pay monthly lease fees.

Q: Wouldn't the Tactical Solution be sufficient?

A: No. Unfortunately the Tactical solution is a temporary measure that should only be used during emergencies. The Tactical Solution will connect existing radio systems together to allow agencies to talk with one another. It does not increase radio capacity, but rather increases radio traffic on existing channels. A comparison is much like the old party-line phone system where there were many users trying to use a single phone line or channel. The Tactical solution is a measure to provide basic interoperable communications until the Strategic Solution is constructed.

Q: Will local agencies be mandated to use VIPER?

A: No, there are no mandates to participate in VIPER. The VIPER project is an effort to assist in the efficiency and effectiveness of state and local public safety agencies by using a common interoperable communications system. Optimally it would be more effective if all agencies were on VIPER, however we realize that some agencies have recently invested in their own systems and have not realized a return on that investment. And we understand that there are agencies that have no desire to be a part of VIPER at all.

Q: Will VIPER Radios cost $5000 each?

Like almost all technology products, radio prices vary depending upon the number and cost of options purchased regardless of the radio system they will be used on. Radios used to access VIPER can vary in price from $1500 to $4000.

Q: Are other alternatives possible?

Yes, but not as efficient.

Leased commercially owned private radio system:

This involves a vendor building a statewide radio system for public safety and charging a user fee for each and every user. Too expensive. The estimated fee for each radio on the network would exceed $75.00 per month.

Public Radio Systems

Another alternative is Nextel. However, the estimated number of towers needed to cover ALL NC could exceed 600. Return on investment for vendors would not be reasonably realized for rural areas. Not compliant with public safety APCO 25 Standards.

Satellite

Satellite technology does have one advantage over typical trunked radio systems in that it is not terrestrial based. However, the primary drawback to satellite systems is that the radio must be in constant view of the sky. This would eliminate operation inside buildings or in areas of dense foliage or during heavy rainfall or intense cloud cover.

Viper Partnerships

Local Partners

Alamance County	Durham County	Pasquotank County
Beaufort County	Edgecombe County	Pender County
Bertie County	Gaston County	Perquimans County
Bladen County	Gates County	Pitt County
Brunswick County	Graham County	Rockingham County

Buncombe County	Granville County	Sampson County
Burke County	Halifax County	Stanly County
Cabarrus County	Harnett County	Stokes County
Caldwell County	Hertford County	Surry County
Carteret County	Hoke County	Swain County
Catawba County	Hyde County	Town of Chapel Hill
Cherokee County	Iredell County	Town of Creedmoor
Chowan County	Lee County	Town of Hudson
City of Asheville	Lenoir County	Town of Plymouth
City of Lenoir	Lincoln County	Town of Seven Springs
City of Mooresville	Macon County	Town of Swan Quarter
Clay County	Martin County	Tyrrell County
Cleveland County	Mecklenburg County	Vance County
Columbus County	Mitchell County	Wake County
Craven County	Nash County	Washington County
Cumberland County	New Hanover County	Wilkes County
Dare County	Orange County	Yancey County
Duplin County		

State Partners

Alcohol Law Enforcement	Law Enforcement Support Services	South Carolina Law Enforcement Division
Butner Public Safety	NC A&T University	South Carolina State Highway Patrol
Civil Air Patrol	NC National Guard	State Bureau of Investigation
Dept. of Agriculture	NC Division of Motor Vehicles	State Capitol Police
Dept of Correction	NC HELO Aquatic Rescue Team	State Highway Patrol
Dept. Of Health and Human Services	NC Legislative Police Dept.	State Parks
Dept. of Revenue	NC State University	UNC Air Care
Dept. of Transportation	Office of Emergency Services	UNC Hospital
East Carolina Health System	Office of Information Technology Services	University of NC at Asheville
East Carolina University	Office of State Fire Marshal	University of NC at Chapel Hill
Elizabeth City State University	Ports Authority	
Emergency Management	Public Health	

Federal Partners

Bureau of Alcohol, Tobacco and Firearms
Drug Enforcement Administration
Federal Bureau of Investigation
U.S. Marshals Service
U.S. Secret Service

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